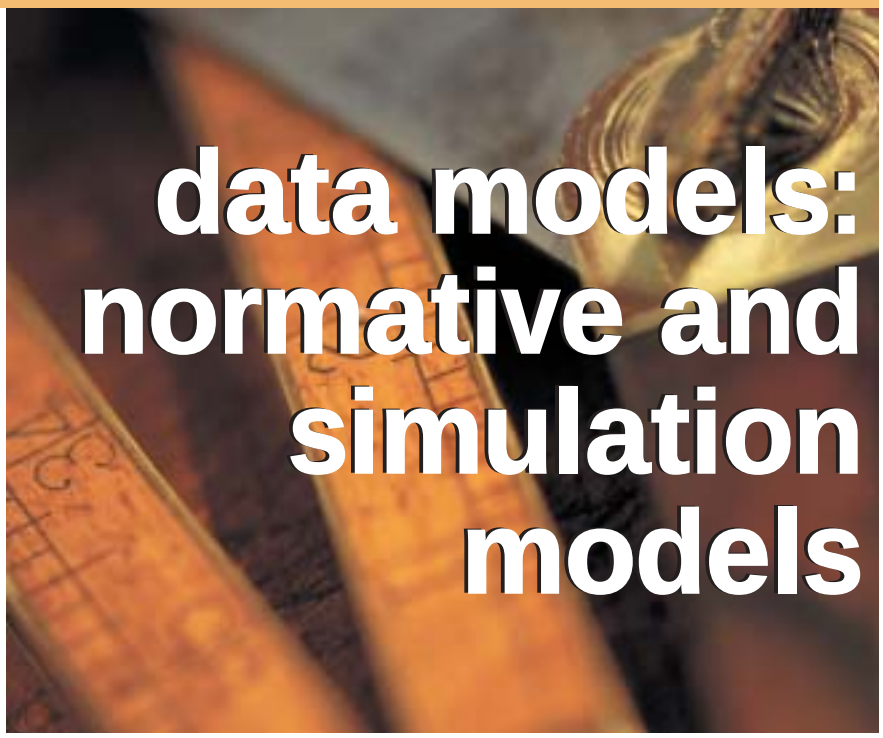
by Chuck Chakrapani, Ph.D.

The ROI models we have talked about so far (subjective and decision models) do not need to be based on actual data. Rather, they can be built on pure assumptions. Data models, on the other hand, incorporate at least some actual data in arriving at ROI. In these models the future ROI is mainly derived from past data. Because we assume that patterns held true historically will also apply to the future, these models are also known as assumptive linkage models. In their simplest form, these models apply normative patterns found in the accumulated data to the current situation. In their more complex form, they include marketing mix and optimization models.



data models: normative and simulation models

NORMATIVE MODELS

Normative models use past patterns (such as historical averages) as benchmarks to evaluate current situations. To be realistic, normative models can be used only if data had been collected in a consistent manner either by using similar questions or using similar methods. Thus, if we collect customer satisfaction measures on a standardized questionnaire, the past data become a benchmark against which new measurements can be evaluated. If we can link past customer satisfaction measures to some financial metric, then we can estimate how customer satisfaction measures relate to financial measures, to establish the ROI. As an example, the research firm Millward Brown[1] routinely pretests TV advertisements before they are aired and calculates a score known as AI, which is an advertising tracking measure that can be related to the ad's success. The pretests provide an opportunity for the ad agency to rework the ad and improve the future AI score, if the ad is found to have a low AI potential.

It is not unusual for a revised ad to improve AI by two points, especially for ads that are judged to be ineffective in the pretest. But this involves reworking the ad and additional costs. Let us assume that the cost of pre-testing the ad is $30,000 and the cost of discussions with the agency adds another $10,000 to the cost. There is also the cost of reworking the ad. Let us assume that this adds another $30,000 to the cost. Obviously, the total cost of research (including the discussions and rework suggested by research) is $70,000. The question is whether the cost is justified, whether the revised ad increased the ROI by more than $70,000.

Cost of research (ad testing)	$30,000
Discussion of implications, strategy	$10,000
Cost of rework	$30,000
Total cost	**$70,000**

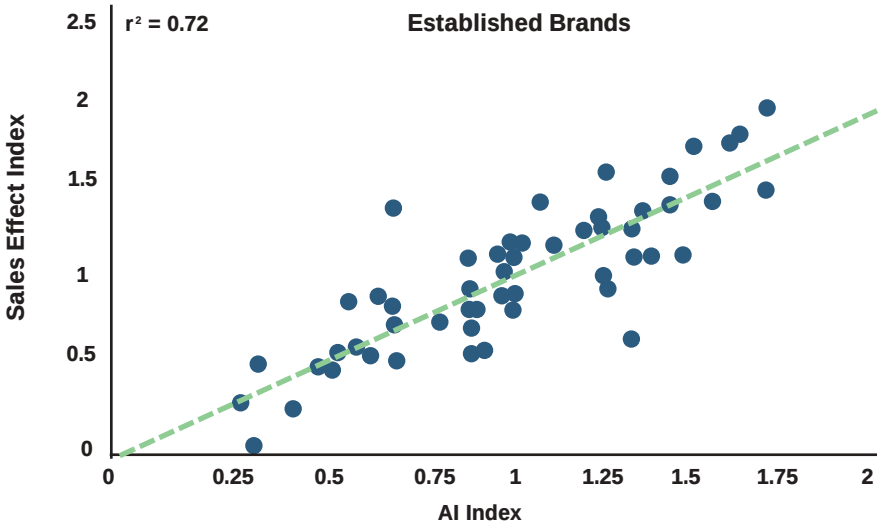
To calculate this, we need to know what impact a two-point increase in AI has on sales. Millward Brown has tested over 35,000 ads and has tracked hundreds of brands over the past 30 years and has developed a relationship between sales and AI. The relationship shows that the AI index and the subsequent sales index correlate strongly (r=+0.85), as shown in Exhibit 1. The exhibit shows the relationship between the AI index change and sales effect index change.

The exhibit shows that, for established brands, when the AI metric as index is correlated with the sales effect index, the correlation in a high 0.85. In other words there is a strong predictable relationship between ROI (as measured by sales) and the AI measure. The r^2 is 0.72 (72% of the variation in sales can be attributed to the changes in the AI measure.) It is likely that this relationship will not hold for new brands. Most likely they will need different norms.

On the basis of this normative relationship, the firm can estimate that for a product of the type being tested, a two-point increase in AI will result in a potential sales increase of $750,000. In our example, to increase the potential AI, the ad has to be reworked and this involves an investment of $70,000. Deducting these costs from $750,000 we have a return of $680,000 (net of research and reworking costs) on an investment of $70,000. The ROI on research then is 680,000/100,000 = 680%[2].

The above idea is illustrated in Ex-

EXHIBIT 1: EFFECT OF AI ON SALES



hibit 2. (The spreadsheet developed by Bill Ratcliffe, formerly of Millward Brown, who kindly agreed to let me use it.) The first column of the exhibit shows the ad that is put out without research with the resultant sales. The second column shows the results that include a Link test (a test used by Millward Brown to evaluate ads) while the third column shows the results which include the use of two research tools used by Millward Brown: Ad Selector and Link. The second column shows the same ad that was tested and improved.

The spreadsheet is a simple simulation tool. The input numbers can be based on past data or assumptions. It allows us to understand the impact of alternative scenarios. What if the reworked ad improves AI by only one point instead of two? What if the cost of reworking is $80,000 and not $70,000? What if the projected increase in sales for this category is not $750,000, but only $700,000? In all such cases, the appropriate numbers can be input in relevant sales and ROI calculated. Thus a spreadsheet, used with normative data, is a flexible tool capable of accommodating additional assumptions and restrictions, if necessary.

We need to keep in mind that the expected ROI is based on a normative model and is subject to statistical and other errors. However, to the extent the model is robust, we should be able to estimate the ROI close enough to understand whether the research investment is likely to be worthwhile or not and what the likely ROI is on our research investment. As with decision models, normative models cannot guarantee success in every single case. However, robust relationships found in the past tend to increase the chances of success and decrease the chances of failure in the future.

Many large research firms such as Millward Brown and Ipsos-ASI that use specific models repeatedly to collect data tend to accumulate normative data. These normative data can be used to assess the ROI. Normative data, if based on a large number of cases, can be a valuable source for estimating ROI.

MARKETING SIMULATION MODELS

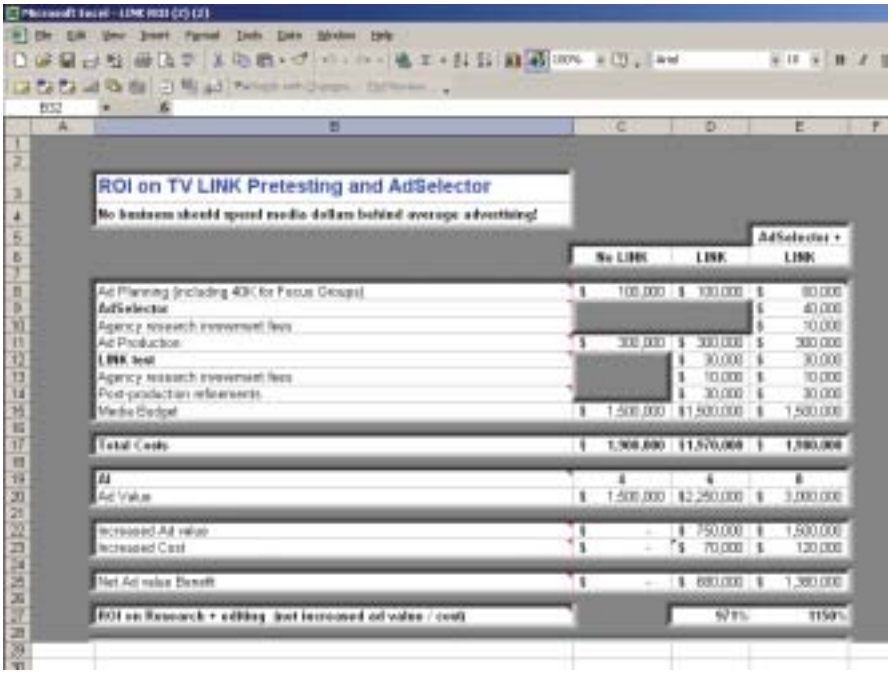
Another optimization technique that assists in calculating ROI is the use of simulation models. These models, as their name implies, simulate marketing processes. Sophisticated simulation models incorporate both the qualitative and the quantitative aspects of the marketing process.

1. What channels, products, offers, etc. are in use or under consideration?
2. What structures are available for integrating these elements into a cohesive marketing process?
3. How customers and prospects respond to marketing activities at each stage of the marketing process?

Simulation tools themselves are often coupled with a discovery process to uncover the structure of the marketing process and with a quantitative analysis process that provides quantitative inputs.

Simulation tools can be used to ad-

EXHIBIT 2: ROI ON TV LINK PRETESTING AND ADSELECTOR



dress very specialized tactical questions. They can also be advantageous in addressing high-level strategic issues. Specifically, simulations can be used to account for the structure of the marketing process and address questions that are outside the patterns that held true in the past: they can be used to address the effect of something new, something that is very different from what has been done in the past.

Simulations are able to go beyond observed patterns of the past for two reasons. First, by modeling what has worked in the past they are able to include substantial information about structure – why things did or did not work. The details can serve as inputs to new situations. Second, we can incorporate hypotheses about new or untried marketing programs by including a variety of inputs such as survey data, expert opinions and industry experiences. We can thus integrate new hypotheses into the model of the overall marketing process.

MATHEMATICAL PROGRAMMING MODELS

In recent years, powerful database and statistical analysis techniques have become available to support Customer Relationship Management (CRM). As a result, the depth and complexity of inputs relating to target marketing programs have increased considerably. For example, consider the question of how likely a consumer is to buy your product. In the database, information relating to probability of purchase may be available by offer, profitability, costs, marketing budget, restrictions on customer contact and so on. Such information can point to the opportunities and constraints that define many marketing programs. A marketer needs to maximize ROI given these opportunities within several constraints. Mathematical programming techniques provide a way to optimize the ROI through targeting the offers that maximize the return, while taking into account the constraints associated with each course of action. Mathematical programming models tend to be larger in scope than normative models but less elaborate than marketing simulation models. In one sense we can consider the mathematical programming model as a junior cousin of the marketing simulation model.

COMPARING NORMATIVE AND SIMULATION MODELS

How do these two models compare? In terms of results they are hard to compare, because there is no systematic data that compares the results obtained by these two types of models. However, it is not difficult to compare what these two models do and what they hope to achieve.

Normative models are generally narrow in scope. Usually norms are developed on a few metrics of interest. These metrics are chosen with the expectation that they would lead to marketing success in some areas and thus to an increasing ROI. The advantages are that the metrics can be clearly focused and a considerable amount of data can be collected in a not-too-long time frame.

Marketing simulation models, on the other hand, tend to be more elaborate. A well constructed simulation model tends to be holistic and does not assume that changes to one aspect of the system will have no effect on the other parts of the marketing system. They enable us to manipulate more than one variable at the same time and study the effects. On the not-so-positive side, these models are more difficult to evaluate precisely because of too many "moving parts." Because they tend to combine past data (like normative models do) and assumptions of how things are likely to work (like decision models do), simulation models tend to be hybrid models in terms of the inputs that go into these models.

Where one would use a normative model in preference to a simulation model (or the other way around) would depend on the context. If our aim is to understand a specific decision on marketing and if there is a metric with normative data available for comparison, then it is appropriate to use a normative model. However, if we want to assess the totality of our marketing efforts (or even a significant part of our marketing efforts), single and specific metrics are unlikely to lead to satisfactory estimates or ROI.

While it is true that some prominent figures such as Fred Reichheld (*The Ultimate Question: Driving Good Profits and True Growth*, Harvard Business School Press, 2006) assert that if you ask a single "ultimate" question such as "Would you recommend this business to a friend?" along with some scoring system, you would have enough information to grow your business, and hence your ROI. Despite claims to the contrary, there is precious little evidence that simplistic schema can transform any organization to an ROI machine.

The most visible of all data models are a class known as marketing mix models. Because of their popularity and complexity we will examine them in greater detail in the next article in this series.

REFERENCES

[1] Although the procedures described here are essentially true, the example should be treated as strictly hypothetical, designed for illustrative purposes. The calculations involved in actual situations are somewhat more complex, specialized and subject to additional assumptions. I've used Millward Brown models to illustrate normative models because of my familiarity with the organization, having worked there for a few years. Normative models are used by many other research houses and I would assume that their experience is comparable to what is presented here.

[2] Again, we may want to deduct the cost of goods sold from the return to arrive at the "true" ROI. But these are essentially details of calculations that can easily be built into the spreadsheet.

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